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(54) Light control system

(57) A light control system for controlling operation of a group of lights used in banqueting/roadshow/disco situations which avoids the need for manual adjustment of light positioning. The system comprises a plurality of lights (12, 13, 14, 15), each light having at least one motor (12B, 12D, 13B, 13D etc.) for effecting movement of the respective light, a microprocessor 17 programmed to transmit the required control signals to the motors, a activator for activating and deactivating the microprocessor and a data transmitter for transmitting instructions to the microprocessor. The activator may be a directionally specific laser pointer. The data transmitter may be a non-directionally specific radio or infra-red transmitter and may be combined with the activator in a single remote control device 22. Preferably, the lights each have two motors to provide 'pan' and 'tilt' functions.

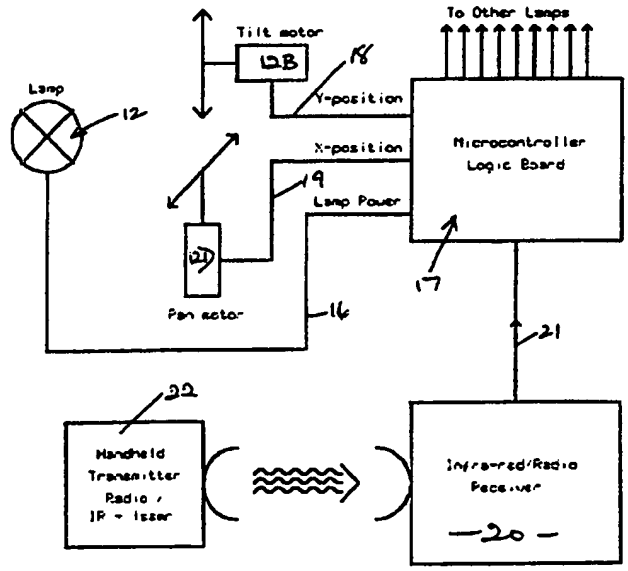

FIGURE 3

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LIGHT CONTROL SYSTEMS

Field of the Invention

This invention relates to light control systems and to mounting arrangements for overhead lighting such as spotlights and lanterns.

An overhead lighting system may include many banks of lights each of which has to be directed correctly.

The "PAR 36" is the most used light in the banqueting and small roadshow/disco business. For banquets, the light may be used to light a central table display, whether this be flowers or a solid item. This is usually provided with a white light and it may also be dimmed to different levels. In the roadshow/disco business, this light is commonly used with coloured gels and run through a controller to create dancing lights or give colour to a presentation.

Adjustment of the lights at present involves the use of ladders to focus and adjust the lights. Last-minute focussing is both labour-intensive and hazardous because the ladders have to be moved between the banqueting tables.

The "PARCAN" is the most widely used lightweight lantern in the entertainment business, and is mostly used to colourwash and profile.

When adjustment of a "PARCAN" is currently required, the trussing on which the "PARCAN" is mounted has to be scaled. This is also labour-intensive and can again be hazardous due to the working height that is often required.

It is accordingly an object of the present invention to provide an improved light control system and an improved light mounting arrangement which avoids such problems.

Summary of the Invention

According to a first aspect of the present invention there is provided a light control system for controlling operation of a plurality of lights, said system comprising at least one motor for effecting movement of each respective light, a microprocessor programmed to transmit the required control signals to the motors, an activator for activating and deactivating the microprocessor and a data transmitter for transmitting instructions to the microprocessor.

There are preferably a plurality of banks or groups of lights, with each bank or group of lights supported by means of a housing on which the motors are mounted. There may be two motors for each light and, for example, four or six lights in each bank or group.

One motor may serve to effect rotation of the associated light and the other motor may serve to effect tilting of the associated light.

The activator for activating and deactivating the microprocessor may be directionally specific and, in such case, preferably comprises a laser pointer which can be operated from the ground to select a particular bank or group of lights. The laser pointer may be directed at one or other of a pair of photocells or sensor units with the arrangement such that, when one of the photocells or sensor units receives the laser beam, the microprocessor receives a "select" signal and is activated whereas, when the laser beam is directed at the other photocell or sensor unit, the microprocessor receives a "deselect" signal and is deactivated.

The data transmitter may be an infra red or radio or like transmitter which transmits the appropriate data which is received by the activated microprocessor which then transmits the required instructions to the motors to effect the required movements of the motors to position the lights as required.

According to a second aspect of the present invention there is provided a light mounting arrangement comprising a housing on which a plurality of lights are mounted, the lights being movable relative to the housing and at least one motor being associated with each light for effecting the required movements of the lights, a microprocessor within the housing, which microprocessor is programmed to transmit the required control signals to the motors,

the microprocessor being arranged to respond to a remote activator and to receive signals from a remote data transmitter such that, when the microprocessor has been activated, a particular motor can be selected and then caused to operate as required.

As mentioned above, the remote activator may be a laser pointer which can be used to select an appropriate one of a large number of light mountings to activate the microprocessor within the housing so that, when data is transmitted by, for example, an infra red or radio transmitter, the motors of that unit can be selected individually and then moved as required. The laser pointer and the infra red or radio transmitter may be incorporated, together, in a single hand-held unit.

The housing may be supplied with brackets to accept a gel frame.

Brief Description of the Drawings

Figure 1 is a front elevation of a light mounting arrangement,

Figure 2 is a side elevation of the light mounting arrangement, and

Figure 3 is a block diagram showing the mode of operation of the light control system.

Description of th Pref rred Embodiment

The light mounting arrangement shown in Figures 1 and 2 comprises a housing 10 which is provided with a pair of clamps 11 by means of which the housing 10 can be mounted on a beam or other support. Four lights 12, 13, 14 and 15 are suspended from the housing 10. Each light is arranged for tilting movement about a horizontal tilt axis 12A, 13A, 14A and 15A respectively by means of an associated motor and clutch unit 12B, 13B, 14B and 15B respectively. Each light is also arranged for rotational movement about a vertical axis 12C, 13C, 14C and 15C respectively by means of an associated motor and clutch unit 12D, 13D, 14D and 15D respectively.

Figure 3 shows light 12 and its associated motors 12B and 12D, the light 12 being connected by a line 16 to a microprocessor 17 contained within the housing 10. The microprocessor is connected by a line 18 to the tilt motor 12B and by a line 19 to the pan motor 12D. Transformers (not shown) are also contained within the housing 10 and a receiver unit 20 is mounted on the housing 10. The receiver unit 20 is connected to the microprocessor 17 by a line 21 and is designed to respond to laser signals and to either infra red or radio signals. Such signals are transmitted by a hand-held remote control unit 22.

As shown, four lights are shown as mounted on a housing but it is to be appreciated that there will be a plurality of housings all arranged at elevated positions and with a bank of four or six lights on each housing.

When it is desired to adjust a particular bank of lights, the remote control unit will be activated so as to transmit a laser beam which will be pointed at the selected housing so as to cause the laser beam to impinge on one of a pair of photocells or sensor units associated with the receiver 20. One of the photocells or sensor units functions as an "on" switch such that, when it is illuminated by the laser beam, it will send an "on" or "select" signal to the receiver 20 and this will be transmitted to the microprocessor 17 which will be activated to enable it to respond to subsequently transmitted infra red or radio signals from the remote control unit 22. The "select" signal obtained by the use of a laser beam is a directionally specific signal and that only one microprocessor at a time will be activated.

Once a "selected" microprocessor 17 has been activated, a series of signals will be transmitted by the remote control unit 22. These signals will be infra red or radio signals and will not be directionally specific. There will, however, be only one microprocessor which has been activated and thus only one bank or group of lights will respond to the infra red or radio signals which are then transmitted. Such signals will comprise the appropriate data to effect initially the required power setting for the first light 12 and then to operate the motors 12B and 12D to direct the light beam from light 12 at the required location. Once the required settings for light 12 have been made, the microprocessor 17 will step on to the next light 13, and so on. Once all the lights 12, 13, 14 and 15 have been set as required by the user, he will transmit a

"deselect" signal by means of the laser beam and then move on to the next group or bank of lights mounted on the next housing. The "deselect" signal will be transmitted by illuminating the other photocell or sensor unit. The microprocessor 17 may also be so programmed that it automatically switches itself off after a predetermined length of time.

If the lights which are being controlled are "PARCAN"s, each group of bank of lights may be given an identity code such that, when a radio signal is transmitted by the remote control unit, the first part of the signal may comprise a code such that only the group or bank of lights of a selected identity code will respond to that signal. The initial "select" signal may thus take the form of an identity code transmitted by a radio transmitter.

Claims:-

1. A light control system for controlling operation of a plurality of lights, said system comprising at least one motor for effecting movement of each respective light, a microprocessor programmed to transmit the required control signals to the motors, an activator for activating and deactivating the microprocessor and a data transmitter for transmitting instructions to the microprocessor.

2. A light control system as claimed in Claim 1, which includes a plurality of banks or groups of lights, with each bank or group of lights supported by means of a housing on which the motors are mounted.

3. A light control system as claimed in Claim 2, which includes two motors for each light and four or six lights in each bank or group.

4. A light control system as claimed in Claim 3, in which one of the motors serves to effect rotation of the associated light and the other motor serves to effect tilting of the associated light.

5. A light control system as claimed in Claim 2, in which the activator for activating and deactivating the microprocessor is directionally specific and comprises a laser pointer which

can be operated from the ground to select a particular bank or group of lights.

6. A light control system as claimed in Claim 5, in which the data transmitter is an infra red or radio or like transmitter which transmits the appropriate data which is received by the activated microprocessor which then transmits the required instructions to the motors to effect the required movements of the motors to position the lights as required.

7. A light control system as claimed in Claim 1, in which the activator for activating and deactivating the microprocessor and the data transmitter for transmitting instructions to the microprocessor are combined in a single remote control unit.

8. A light mounting arrangement comprising a housing on which a plurality of lights are mounted, the lights being movable relative to the housing and at least one motor being associated with each light for effecting the required movements of the lights, a microprocessor within the housing, which microprocessor is programmed to transmit the required signals to the motors, the microprocessor being arranged to respond to a remote activator and to receive signals from a remote data transmitter such that, when the microprocessor has been activated, a particular motor can be selected and then caused to operate as required.

9. A light mounting arrangement as claimed in claim 8, which includes two photocells or sensor units associated with each microprocessor, the microprocessor being activated when one photocell or sensor unit is illuminated by a laser beam and deactivated when the other photocell or sensor unit is illuminated by the laser beam.

10. A light control system substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

11. A light mounting arrangement substantially as hereinbefore described with reference to and as shown in the accompanying drawings.

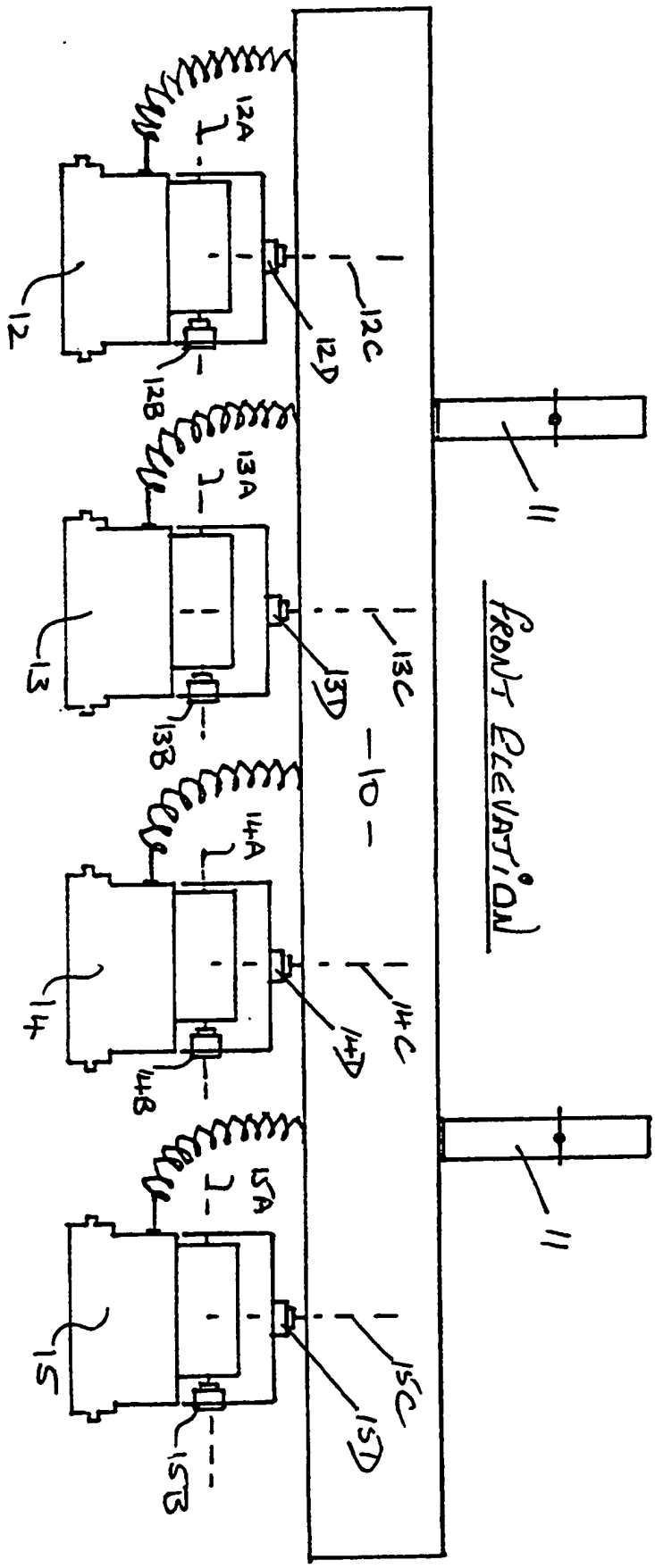
FRONT ELEVATION
10
11
11
12
12A
12B
12C
12D
13
13A
13B
13C
13D
14
14A
14B
14C
14D
15
15A
15B
15C
15D

FIGURE 1

SIDE ELEVATION

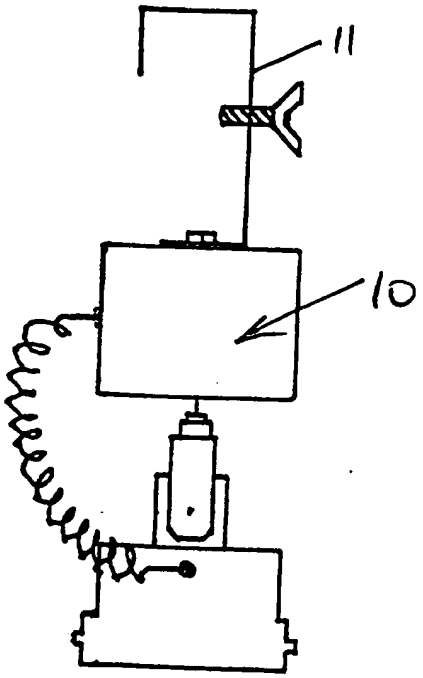

FIGURE 2

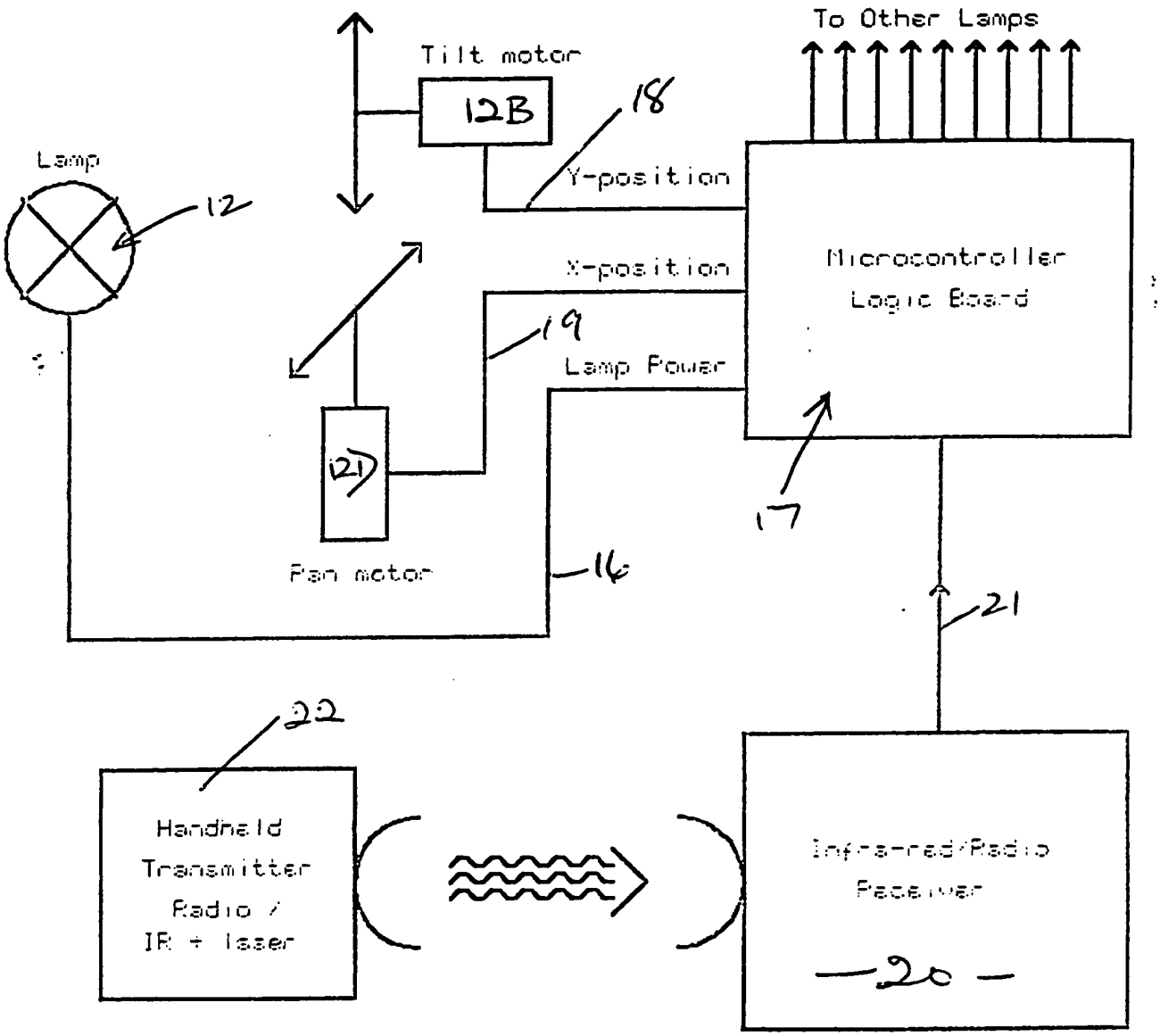
To Other Lamps
Tilt motor
12B
18
Y-position
Lamp
12
X-position
Microcontroller
Logic Board
19
Lamp Power
12)
Pan motor
16
17
21
22
Handheld
Transmitter
Radio /
IR + laser
Infrared/Radio
Receiver
20

FIGURE 3